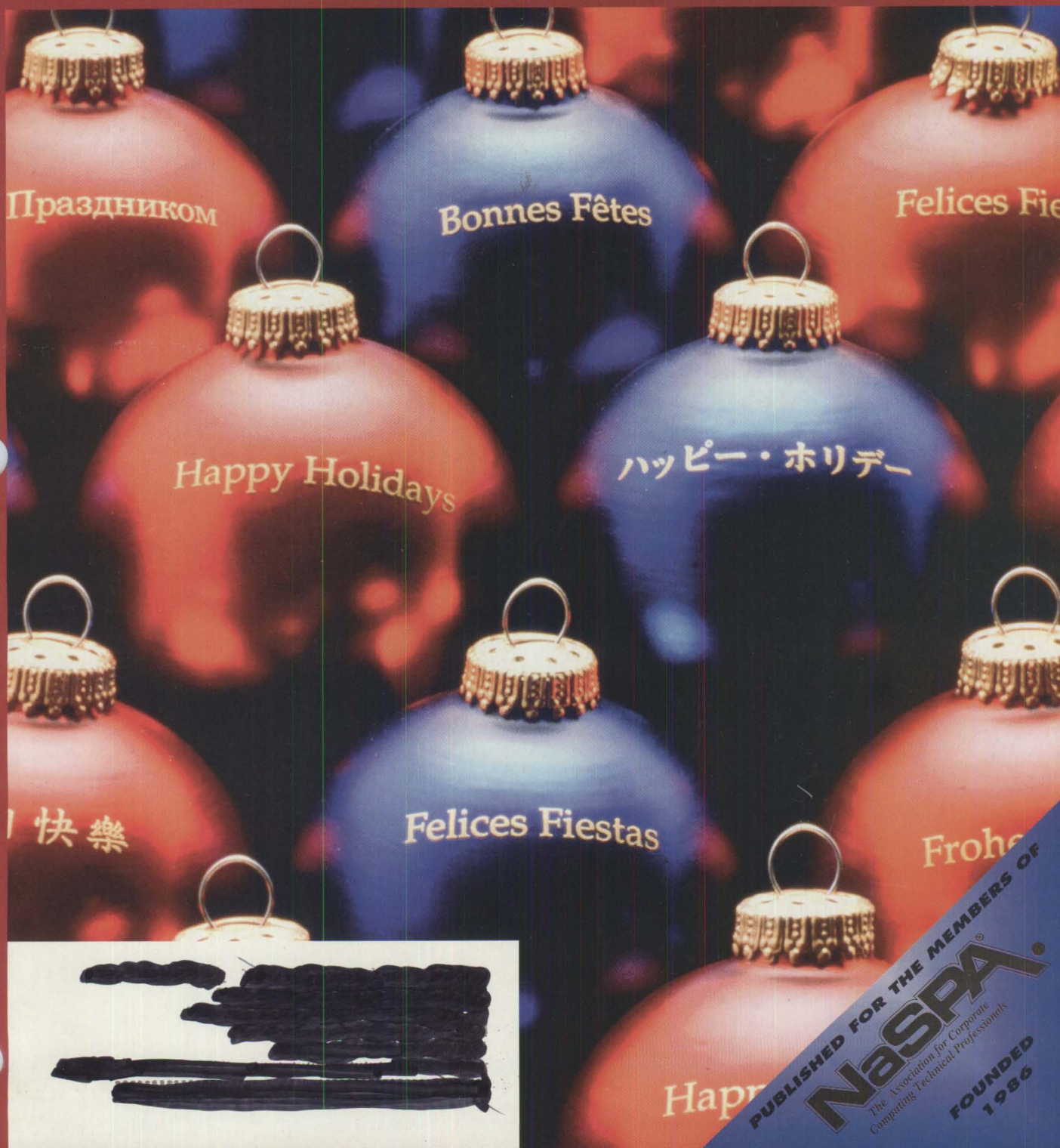


IN-DEPTH REPORT

COMPUTING SOLUTIONS

VOLUME 1 • NUMBER 4 • DECEMBER 1993



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NASPA
The Association for Corporate
Computing Technical Professionals
FOUNDED
1986

FROM THE PRESIDENT

Dear Member;



INDUSTRY RUMBLINGS

Time marches on and the line between mainframes and PC/LAN systems in the corporate world keeps getting harder to see. John Scully, who as Apple's CEO stated in the mid-1980s that the mainframe makes a great file server, joined the dinosaur ranks recently. With the availability of DOS, OS/2, Windows, inexpensive application software and even more inexpensive hardware, the Macintosh line is unable to generate the profit margins that Apple is accustomed to. This is nothing new, however. We have seen this in the IBM PC world over

the last few years.

Apple is just the latest company to feel the competitive pinch. So Mr. Scully, who presided over the fastest growing computing company in the United States, has followed the path of IBM's John Akers and decided that it was time to seek greener pastures. Now that I think of it, the only leader who has been in power for any length of time and is still in power is Fidel Castro. Needless to say, his tenure isn't going to be for much longer either. As I was saying, the line in corporate computing gets fuzzier and fuzzier. As I write this letter, I am reviewing a press release from an Ohio company whose product is Mainframe PKZIP. About time, eh?

CHAPTER PRESIDENTS COUNCIL

In early October, NaSPA's board of directors, officers and chapter presidents met in Phoenix for their semi-annual Chapter Presidents Council meeting. At the meeting we present recurring leadership training for new chapter officers, and we discuss trends within the industry and the association. This year, one of the most important topics was *what is NaSPA membership and what does it mean to me?* After discussing the publications, NaSCOM, NaSTEC and chapters ad infinitum, the topic was refocused and the question asked again. *What is NaSPA membership and what does it mean to me?*

The answer to this question is on a poster that I found in a book store one day. The gist of the poster is this: Everything I learned about life I learned in Kindergarten. I learned to stick together in groups and hold hands. I learned never to go out into the dark alone. And when frightened or confronted with the unknown, I learned to seek the council of friends. I also learned that warm milk and chocolate chip cookies would solve the world's problems. After all, could you imagine the cold war having started if the involved countries sat around a peace table discussing the issues with warm milk and chocolate chip cookies? I digress.

So what does NaSPA membership mean to you? NaSPA is your resource. NaSPA is your education source. NaSPA is your support. When it's dark and cold, and frightening and changing, and you don't know where to turn, look to NaSPA for a friendly voice, support and the technical answers you need.

NaSPA is the largest not-for-profit association for corporate computing technical professionals. We exist only to serve your needs. We are here for you.

NASPA SERVICES

NaSPA is pleased to announce four new services regarding our members' insurance requirements. First, we have a large percentage of members who are self-employed consultants and contractors. To help these members, we are pleased to announce Errors and Omissions Liability insurance. Second, for members who don't already have personal insurance, we are also pleased to announce Term Life, Hospital Income and Personal Accident insurance. See the **NaSPA News** section on page 42 for more information on this.

Upgrades to NaSCOM have been ordered and will most likely be installed by the time you read this. Online storage is being upgraded from 300MB to about 10GB. Additionally, a PC-based graphical interface program is being made available to our members at no charge. This will provide a point-and-click communications program specifically designed for NaSCOM. More information on these two items is available in the **NaSPA News** section also.

Take care and please continue to let us know your ideas, suggestions and criticisms.

Sincerely,

Scott Sherer
President

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The Association for Corporate
Computing Technical Professionals

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The mission of NaSPA, Inc., a not-for-profit organization, shall be to serve as the means to enhance the status and promote the advancement of all corporate computing technical professionals; nurture member's technical and managerial knowledge and skills; improve member's professional careers through the sharing and dispersing of technical information; promote the profession as a whole; further the understanding of the profession and foster understanding and respect for individuals within it; develop and improve educational standards; and assist in the continuing development of ethical standards for practitioners in the industry.

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ETHERNET PU EMULATION CONFIGURING OS/2 COMMUNICATIONS MANAGER

By JOHN JOHNSTON

This article will show you how to configure OS/2 Communications Manager to emulate an SNA Physical Unit (PU) on a workstation connected to an Ethernet segment. A sample Communications Manager configuration will be examined using a step-by-step approach through the configuration process.

The configuration sample provided in this material was performed on an OS/2 2.0 workstation using Extended Services Version 1.0.

PU emulation on an Ethernet segment has all of the benefits of Token-Ring PU emulation. (Token-Ring PU emulation was discussed in my August article "Token-Ring PU Emulation Configuring Communications Manager," *IN-DEPTH Report: Computing Solutions*, October 1993). The workstation can have up to four host terminal sessions and one printer session.

THE PHYSICAL HOST CONNECTION

To access the host from an Ethernet segment, you must first establish a physical connection from the network to the host. There are two basic host connection methods:

- Token-Ring connection via a 3174 or 37x5 with a Token-Ring Interface Coupler (TIC); or
- an Ethernet-to-host communications controller, such as the IBM 3172.

The Communications Manager configuration example is written for the Token-Ring physical host connection type. The example could be used as is for the Ethernet (3172) host connection. If you are using the Ethernet host connection you do not need to implement the router function described in the material.

BRIDGES AND ROUTERS

Ethernet PU emulation using a Token-Ring host connection, as illustrated in Figure 1, introduces another layer of complexity to the network. To have an Ethernet workstation participate in the "downstream PU"

method, we must be able to pass SNA traffic from the Token-Ring to the Ethernet segment. IBM saw the need for this functionality and developed the 8209 bridge.

The workstation shown in Figure 1 is configured to access the host as a PU. A Token-Ring connection is made to the host using a 3174 control unit which has a TIC installed. The SNA traffic is routed from the Token-Ring to the Ethernet segment via an 8209 bridge.

In a pure Token-Ring environment, the TIC encapsulates the SNA traffic within Token-Ring packets and places them on the network. An OS/2 workstation that is emulating a host PU receives these SNA Token-Ring packets and uses this data to reconstruct 3270 screens or print. The workstation sends SNA traffic back to the host in Token-Ring packets. The TIC then breaks these packets down into native SNA packets and places them on the SNA network.

To emulate a PU on an Ethernet workstation, as illustrated in Figure 1, an additional translation step must occur. The TIC must still encapsulate the SNA traffic with Token-Ring packets and place the data on the Token-Ring network. Now the Token-Ring encapsulated SNA traffic must be translated to the Ethernet frame type and forwarded to the proper Ethernet segment. A bridge or a router must be used to perform this forwarding function.

Not all bridges and routers support the transport of SNA traffic. SNA is a very difficult protocol to route because it is extremely timing-dependant. If the PU or LU emulator does not respond to the host within a certain timeframe, VTAM will automatically reset the device. This reset will disrupt the terminal sessions at that workstation.

Another problem with bridging and routing SNA traffic from Token-Ring to Ethernet is that there are no standards defined to perform the translation. IBM saw the need for Token-Ring to Ethernet SNA bridging and developed its own standards with the 8209 bridge.

CONFIGURING COMMUNICATIONS MANAGER TO PROVIDE ETHERNET PU SUPPORT

The following procedure will guide you through a step-by-step OS/2 Communications Manager configu-

FIGURE 1: ETHERNET WORKSTATION ACCESSING HOST AS A PU

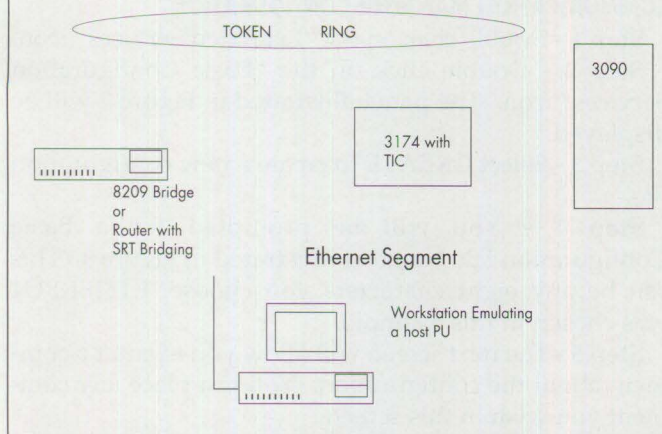


FIGURE 2: CREATING A NEW CONFIGURATION FILE

EXTENDED SERVICES BASIC CONFIGURATION SERVICES

SELECT AN OPTION TO CREATE OR CHANGE A COMMUNICATIONS MANAGER BASIC CONFIGURATION FILE.

- >1. CREATE
- 2. CHANGE
- 3. CREATE FOR ANOTHER WORKSTATION
- 4. CHANGE FOR ANOTHER WORKSTATION

ESC=CANCEL F1=HELP

FIGURE 3: NAMING THE NEW CONFIGURATION FILE

EXTENDED SERVICES BASIC CONFIGURATION SERVICES

SELECT AN OPTION TO CREATE OR CHANGE A COMMUNICATIONS MANAGER BASIC CONFIGURATION FILE.

- >1. CREATE

CREATE BASIC CONFIGURATION FILE

TYPE A FILE NAME FOR THE BASIC CONFIGURATION FILE TO BE CREATED AND ENTER

BASIC CONFIGURATION FILE NAME [ETHERPU1]

ENTER ESC=CANCEL F1=HELP

FIGURE 4: CONFIGURING HOST SESSIONS

3270 TERMINAL EMULATION DEFAULTS

USE THE SPACEBAR TO CHANGE 3270 TERMINAL EMULATION SELECTIONS. AN ARROW IS DISPLAYED NEXT TO THE OPTION WHEN IT IS SELECTED. PRESS ENTER WHEN YOU HAVE COMPLETED ALL OF THE SELECTIONS.

- NUMBER OF 3270 HOST SESSIONS 1 2
- 3 >4
- 3270 PRINTER SESSION >YES
- NO
- START ALL SESSIONS AUTOMATICALLY >YES
- NO
- CONNECTION TYPE DFT
- >LAN
- SDLC

ENTER ESC=CANCEL F1=HELP

FIGURE 5: THE NIC DRIVERS THAT ARE SUPPLIED WITH EXTENDED SERVICES

- 3COM 3C503 ETHERLINK II
- 3COM 3C523 ETHERLINK/MC
- IBM PC NETWORK II AND BASEBAND ADAPTER
- IBM PC NETWORK II/A AND BASEBAND/A ADAPTERS
- IBM TOKEN-RING NETWORK ADAPTERS
- IBM TOKEN-RING NETWORK BUSMASTER SERVER ADAPTERS
- 3270 ADAPTER FOR 3174 PEER COMMUNICATIONS
- IBM PS/2 ADAPTER FOR ETHERNET NETWORKS
- WESTERN DIGITAL ETHERCARD PLUS ADAPTERS
- WESTERN DIGITAL ETHERCARD PLUS MICRO CHANNEL ADAPTERS
- UNGEMANN-BASS NIUPC ADAPTERS
- UNGEMANN-BASS NIUPS ADAPTERS

FIGURE 6: SELECT LAN ADDRESS TYPE

SELECT LAN ADDRESS TYPE

SELECT THE TYPE OF NETWORK ADDRESS AND PRESS ENTER.

NETWORK ADDRESS TYPE :

USE UNIVERSAL ADDRESS

>SPECIFY A LOCALLY ADMINISTERED ADDRESS.

ENTER ESC=CANCEL F1=HELP

FIGURE 7: OS/2 PU CONFIGURATION - LOCALLY ADMINISTERED ADDRESS

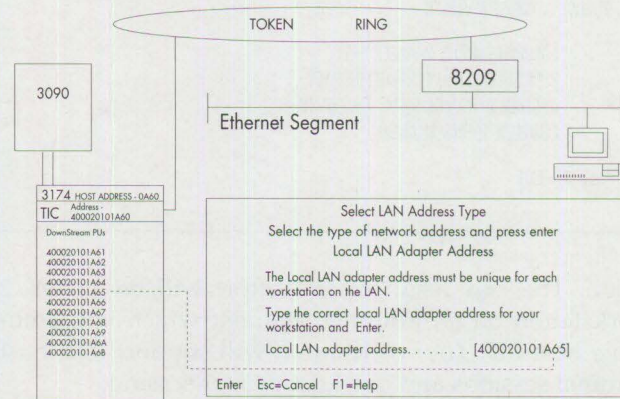


FIGURE 8: OS/2 PU CONFIGURATION - LAN DESTINATION ADDRESS

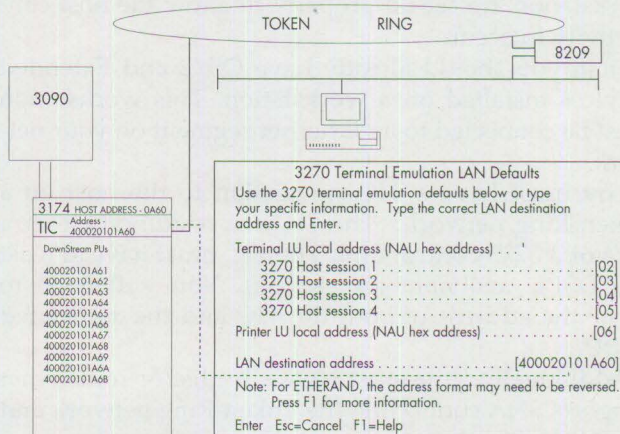


FIGURE 9: OS/2 LOCAL NODE NAME AND VTAM PARAMETERS

Configuration Network Defaults

Enter to use the configuration defaults displayed below or type your specific information and Enter.

Local node name[LSNA1A65]

Network ID[APPN]

Local node ID (in hex)[00000]

Step 12 Panel

SYS1.VTAMLST Member LSNA1A65

PUA65	VBUILD	TYPE=LOCAL
A01A65	PU	CUADDR=A65
A65002	LU	LOCADDR=2
A65003	LU	LOCADDR=3
A65004	LU	LOCADDR=4
A65005	LU	LOCADDR=5
A65006	LU	LOCADDR=6

FIGURE 10: COMPLETING INSTALLATION

EXTENDED SERVICES INSTALL/REMOVE MENU

SELECT AN OPTION.

1.INSTALL COMMUNICATIONS MANAGER

>2. INSTALL DATABASE MANAGER

3. REMOVE COMMUNICATIONS MANAGER

4. REMOVE DATABASE MANAGER

COMMUNICATIONS MANAGER HAS
BEEN SUCCESSFULLY INSTALLED.SELECT
ANOTHER OPTION OR SELECT F3=EXIT TO
COMPLETE THEINSTALLATION.

F1=HELP F3=EXIT

ration. The end result of this effort will be an OS/2 workstation on an Ethernet segment which will emulate a host PU. The workstation will support four host terminal sessions and one host printer session.

PREREQUISITES

Before we begin, make sure that your network and workstation are set up properly to allow the host connectivity to occur.

First, you should already have OS/2 and Extended Services installed on a workstation. This workstation must be connected to an Ethernet segment on your network.

You must have a TIC connection to the host on a Token-Ring network. The TIC can reside on either a 3174 or a 37x5 control unit. The TIC must have at least one DSPU available for our use. You will need to know the address of both the TIC and the associated DSPU.

Additionally, you must have a bridge or router that supports SNA connecting the Token-Ring network and the Ethernet segment.

COMMUNICATION MANAGER CONFIGURATION

Step 1 - Double click on the "Extended Services" icon.

Step 2 - Double click on the "Basic Configuration Services" icon. The panel illustrated in Figure 2 will be displayed.

Step 3 - Select CREATE to create a new configuration file.

Step 4 - You will be prompted for a Basic Configuration File Name as illustrated in Figure 3. This can be any eight characters you choose. ETHERPU1 was chosen in this example.

Step 5 - The next screen will allow you to enter a comment about the configuration. You can place any comment you wish in this screen.

Step 6 - Select 3270 Terminal Emulation. The screen illustrated in Figure 4 will appear. Choose four host sessions and a host printer session. All of the sessions will be started automatically. Make sure you select the LAN option under connection type.

Step 7 - The next panel will ask you for the Network Type. Choose ETHERAND Network. Note: ETHERAND is simply means Ethernet. ETHERAND is IBM's trademarked word for Ethernet.

Step 8 - The next panel will prompt you for the type of LAN adapter installed in the PC. Figure 5 illustrates the NIC drivers that are supplied with Extended Services.

Step 9 - This step is crucial for the Downstream PU methodology. The panel illustrated in Figure 6 will be displayed.

As you may recall, the DSPU requires the workstation to become the downstream PU defined in the 3174. To do this, we must select Specify a locally administered address on this panel.

Step 10 - On the next panel we specify our locally administered address (LAA). Figure 7 shows you the actual OS/2 configuration screen and how the LAA relates to the 3174 DSPUs.

You must specify an address of one of the 3174 DSPUs defined in the 3174 configuration.

Step 11 - The next panel will prompt you for a LAN destination address as shown in Figure 8. You must type in the Token-Ring address of the TIC. The LU numbers will be placed in the panel for you. For PU emulation you should accept the default numbers: 02-06.

Step 12 - This panel, as illustrated in Figure 9, will ask you for three items: the local node name, the network ID and the local node ID. The local node name must match the member name in SYS1.VTAMLST that defines the PU.

Notice the Locaddr numbers. These numbers must match the LU numbers defined in Step 11 and must be 2-6.

You may choose the default network ID and local node ID if you are connecting to a local host.

FIGURE 11: THE CONFIG.SYS FILE USED FOR ETHERNET PU SUPPORT

```

IFS=C:\QSZ\HPFS.IFS /CACHE:512 /CRECL:4 /AUTOCHECK:C
PROTSHELL=C:\QSZ\PMShell.EXE
SET USER_INI=C:\QSZ\QSZ.INI
SET SYSTEM_INI=C:\QSZ\QSZSYS.INI
SET OS2_SHELL=C:\QSZ\CMD.EXE
SET
AUTOSTART=PROGRAMS,TASKLIST,FOLDERS
SET
  RUNWORKPLACE=C:\QSZ\PMShell.EXE
SET COMSPEC=C:\QSZ\CMD.EXE
LIBPATH=.;C:\QSZ\DLL;C:\MUGLIB\DLL;C:\QSZ\MDOS;C:\CLIB\DLL;C:\QSZ\APPS\DLL;C:\IBM-
COM\DLL;
SET
PATH=C:\QSZ;C:\MUGLIB;C:\QSZ\SYSTEM;C:\QSZ\MDOS\WINOS2;C:\CLIB;C:\CLIB\APPN;C\Q
SZ\INSTALL;C:\QSZ\MDOS;C\QSZ\APPS;
SET
DPATH=C:\QSZ;C\MUGLIB\DLL;C\CLIB;C\CLIB\APPN;C\QSZ\SYSTEM;C\QSZ\MDOS\WINOS2;
C\QSZ\INSTALL;C\QSZ\BITMAP;C\QSZ\MDOS;C\QSZ\APPS;C\IBMCOM;
SET PROMPT=$I[$P]
SET HELP=C\CLIB\APPN;C\QSZ\HELP;C\QSZ\HELP\TUTORIAL;
SET GLOSSARY=C\QSZ\HELP\GLOSS;
PRIORITY_DISK_IO=YES
FILES=20
DEVICE=C\QSZ\ROCSDD.SYS
DEVICE=C\IBMCOM\LANMSGDD.OS2 /1:C\IBMCOM
DEVICE=C\IBMCOM\PROTMAN.OS2 /1:C\IBMCOM
DEVICE=C\IBMCOM\PROTOCOL\LANDD.OS2
DEVICE=C\IBMCOM\PROTOCOL\LANDLDD.OS2
DEVICE=C\QSZ\TESTCFG.SYS
DEVICE=C\QSZ\POS.SYS
DEVICE=C\QSZ\PMDD.SYS
BUFFERS=30
IOPL=YES
DISKCACHE=64,LW
MAXWAIT=3
MEMMAN=SWAP,PROTECT
SWAPPATH=C\QSZ\SYSTEM 2048 2048
BREAK=OFF
THREADS=256
PRINTMONBUFSIZE=134,134,134
COUNTRY=001,C\QSZ\SYSTEM\COUNTRY.SYS
SET KEYS=ON
REM SET DELDIR=C:\DELETE,512;
BASEDEV=PRINT01.SYS
BASEDEV=IBM1FLPY.ADD
BASEDEV=IBM1S06.ADD
BASEDEV=OS2DASD.DMD
SET BOOKSHELF=C\QSZ\BOOK;
SET EPMPPATH=C\QSZ\APPS
REM DEVICE=C\QSZ\APPS\SASYNCD.A.SYS
PROTECTONLY=NO
SHELL=C\QSZ\MDOS\COMMAND.COM C\QSZ\MDOS /P
FCBS=16,8
RMSIZE=640
DEVICE=C\QSZ\MDOS\VEMM.SYS
DOS=LOW,NOUMB
DEVICE=C\QSZ\MDOS\VDPX.SYS
DEVICE=C\QSZ\MDOS\VXMS.SYS /UMB
DEVICE=C\QSZ\MDOS\VDPMI.SYS
DEVICE=C\QSZ\MDOS\VWIN.SYS
DEVICE=C\QSZ\MDOS\VCROM.SYS
DEVICE=C\QSZ\MDOS\VMOUSE.SYS
DEVICE=C\QSZ\POINTDD.SYS
DEVICE=C\QSZ\MOUSE.SYS

```

```

DEVICE=C\QSZ\COM.SYS
DEVICE=C\QSZ\MDOS\COM.SYS
CODEPAGE=437,850
DEVINFO=KBD,US,C\QSZ\KEYBOARD.DCP
DEVICE=C\QSZ\MDOS\SVGA.SYS
SET VIDEO_DEVICES=VIO_SVGA
SET VIO_SVGA=DEVICE(BVHVGA,BVHSVGA)
DEVINFO=SCR,VGA,C\QSZ\VIOTBL.DCP
DEVICE=C\CLIB\ACSLDIAN.SYS
RUN=C\QSZ\EPW.EXE
RUN=C\IBMCOM\PROTOCOL\LANDLL.EXE
RUN=C\IBMCOM\PROTOCOL\NETBIND.EXE
RUN=C\IBMCOM\LANMSGEX.EXE
DEVICE=C\IBMCOM\MACS\ELNKII.OS2
DEVICE=C\CLIB\APPN\CMKFMD.E.SYS

```

FIGURE 12: THE PROTOCOL.INI FILE USED FOR ETHERNET PU SUPPORT

```

[PROT_MAN]
  DRIVERNAME = PROTMAN$

[IBMLXCFG]
  LANDD_nif=LANDD.NIF
  ELNKII_nif=ELNKII.NIF

[LANDD_nif]
  DRIVERNAME = LANDD$
  BINDINGS = ELNKII_NIF
  Links = 41
  Users = 4
  Max_Saps = 4
  NetAddress = "T40020101A65"

[ELNKII_nif]
  DRIVERNAME = ELNKII$

```

Step 13 - The next screen should tell you that the 3270 emulation feature was successfully completed. Press F3 to continue.

Step 14 - This screen asks you if you want to install the configuration file. Select the Install Basic Configuration option.

Step 15 - The panel shown in Figure 10 is very confusing. It will tell you that Communications Manager was successfully installed and to select F3 to complete the installation. The Install Database Manager option will already be selected.

You should hit F3 here; you will notice a lot of disk activity. It may appear that you are installing Database Manager; however, you are not. Just wait there until the next screen appears.

Step 16 - This panel will tell you that the configuration is completed. It will instruct you to shut down and re-boot your system. You should re-boot and watch closely for errors.

Step 17 - Now it is time to define your workstation to the VTAM software on the mainframe. VTAM has a configuration file that controls all of the mainframe communications devices. In most shops the name of

this file is SYS1.VTAMLST. This name can be changed by the host technicians.

In the OS/2 configuration panel illustrated in Figure 9 we chose LSNA1A65 as the local node name. This name must be defined to VTAM by placing a member named LSNA1A65 into SYS1.VTAMLST. A sample of this member is shown on the bottom of Figure 9.

The first line of the LSNA1A65 member tells VTAM that we are defining a local resource. The second line tells VTAM that we are defining a PU named A01A65. This PU uses MVS address A65. The remaining lines tell VTAM that this PU controls five LUs named A65002-A65006. Notice the Locaddr parameter. This must match the numbers specified in Figure 8 and must be 2-6.

After this member is created in SYS1.VTAMLST, you need to vary the PU and its related LUs active. Use the following VTAM command to do this:

```
V NET,ACT,ID=LSNA1A65,SCOPE=ALL
```

Step 18 - After your PC re-boots, go into the Communications Manager icon and double-click on it. When you are prompted for a Configuration file name, enter ETHERPU1 or whatever name you specified in Step 4.

Note: There is a bug in either OS/2 or Communications

Manager where the Communications Manager icon disappears after performing a configuration. If this happens to you, you can still start Communications Manager by opening an OS/2 full screen or OS/2 Window sessions and entering the following command:

START CM

Step 19 - Your host sessions should come up!

Figure 11 illustrates the CONFIG.SYS file used for the Ethernet PU support. Figure 12 illustrates the PROTOCOL.INI file used for the Ethernet PU support.

/*

Was this article of value to you? If so, please let us know by circling Reader Service No. 35.

NaSPA member John Johnston is manager of Technical Support and Communications for a major hospital in Pennsylvania. John can be reached for comments or questions via NaSCOM. His user ID is Johnjohe.



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